

AGILENT TECHNOLOGIES, INC.  
Legal Department, DL429  
Intellectual Property Administration  
P. O. Box 7599  
Loveland, Colorado 80537-0599

ATTORNEY DOCKET NO. 10011044-1



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Attorney(s): William T. O'Grady, Jr., et al.

Serial No.: 10/014,772

Examiner: Carols R. Ortiz-Rodriguez

Filing Date: December 11, 2001

Group Art Unit: 2125

Title: A VIRTUALIZED GENERIC EQUIPMENT MODEL DATA AND CONTROL ROUTER FOR FACTORY AUTOMATION

COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria VA 22313-1450

TRANSMITTAL OF APPEAL BRIEF

Sir:

Transmitted herewith is the Appeal Brief in this application with respect to the Notice of Appeal filed on August 4, 2005.

The fee for filing this Appeal Brief is (37 CFR 1.17(c)) \$500.00.

(complete (a) or (b) as applicable)

The proceedings herein are for a patent application and the provisions of 37 CFR 1.136(a) apply.

(a) Applicant petitions for an extension of time under 37 CFR 1.136 (fees: 37 CFR 1.17(a)(1)-(5)) for the total number of months checked below:

<input type="checkbox"/>	one month	\$ 120.00
<input type="checkbox"/>	two months	\$ 450.00
<input type="checkbox"/>	three months	\$1020.00
<input type="checkbox"/>	four months	\$1590.00

The extension fee has already been filled in this application.

(b) Applicant believes that no extension of term is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition and fee for extension of time.

Please charge to Deposit Account 50-1078 the sum of \$500.00. At any time during the pendency of this application, please charge any fees required or credit any overpayment to Deposit Account 50-1078 pursuant to 37 CFR 1.25.

A duplicate copy of this transmittal letter is enclosed.

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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I hereby certify that this paper is being facsimile transmitted to the Patent and Trademark Office on the date shown below.

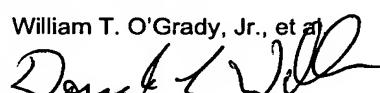
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Typed Name: Douglas L. Weller

Signature: Douglas L. Weller

Respectfully submitted,

By

William T. O'Grady, Jr., et al.  


Douglas L. Weller  
Attorney/Agent for Applicant(s)

Reg. No. 30,506

Date: September 13, 2005

Telephone No. (408) 985-0642



**AGILENT TECHNOLOGIES**  
Legal Department, M/S DL429  
Intellectual Property Administration  
P.O. Box 7599  
Loveland, CO 80537-0599

**PATENT APPLICATION**  
ATTORNEY DOCKET NO. 10011044-1

**IN THE  
UNITED STATES PATENT AND TRADEMARK OFFICE**

**INVENTOR(S):** William T. O'Grady, Jr.; Joel Taylor; Ryo Takeda; Nobuhiko Yoshimura; John D. McNeill; Donald F. Shafer; Janet Gilmore; Patrick Doane

**CONFIRMATION NO:** 9907

**SERIAL NO:** 10/014,772

**GROUP ART UNIT:** 2125

**FILED:** December 11, 2001

**EXAMINER:** Carols R. Ortiz-Rodriguez

**SUBJECT:** A VIRTUALIZED GENERIC EQUIPMENT MODEL DATA AND CONTROL ROUTER FOR FACTORY AUTOMATION

**COMMISSIONER FOR PATENTS**  
P.O. Box 1450  
Alexandria, VA 22313-1450

**SIR:**

**APPEAL BRIEF**

Appellant herein sets forth his reasons and arguments for appealing the Examiner's final rejection of claims in the above-identified case.

**REAL PARTY IN INTEREST**

This Patent Application has been assigned to Agilent Technologies, Inc.  
which has been incorporated in the State of Delaware.

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## **RELATED APPEALS AND INTERFERENCES**

Appellant is aware of no related appeals or interferences.

## **STATUS OF CLAIMS**

Claims 1 through 22 are extant in the case.

Claims 1 through 22 are rejected.

The appealed claims are claims 1 through 22.

## **STATUS OF AMENDMENTS**

After the final rejection, Appellant filed an Amendment dated June 21, 2005. The Amendment was entered.

## **SUMMARY OF CLAIMED SUBJECT MATTER**

### **Claim 1:**

Claim 1 sets out a control router (52,53,61) that provides communication between an automation host (40,43,60) and a plurality of manufacturing tools (46-51,71-74). See the Specification at page 7, lines 11 through 16, page 8, lines 8, lines 6 through 10, and page 8, line 24 through page 9, line 4. Examples of a control router are shown in Figure 3 as GEM router 52 and GEM router 53 and in Figure 4 as GEM router 61. Examples of an automation host (40,43,60) are shown in Figure 3 as factory automation host (40,43,60) 40 and cell controller 43 and in Figure 4 as real GEM host 60. Examples of manufacturing tools (46-51,71-74) are shown in Figure 3 as tools 46 through 51 and in Figure 4 as machines 71

through 74. Each of the plurality of manufacturing tools (46-51,71-74) is used to perform a processing step.

The control router (52,53,61) includes a single communications and process behavioral connection interface (62) to the automation host (40,43,60). See the Specification at page 8, lines 7 through 10. An example of a single communications and process behavioral connection interface is shown in Figure 4 as persistent virtual GEM client 62.

The control router also includes a plurality of virtual host interfaces (67-70). Each virtual host interface (67-70) provides a communications and process behavioral interface (67-70) to one of the manufacturing tools (46-51,71-74). See the Specification at page 8, line 19 through page 9, line 4. Examples of the virtual host interfaces are shown in Figure 4 as virtual GEM hosts 67 through 69 and machine specific host 70.

The automation host (40,43,60) can control and coordinate operation of all manufacturing tools (46-51,71-74) in the plurality of manufacturing tools (46-51,71-74) via the single communications and process behavioral connection interface (62). See the Specification at page 7, lines 2 through 10.

**Claim 12:**

Claim 12 sets out a method for connecting an automation host (40,43,60) to a plurality of manufacturing tools (46-51,71-74) used to perform a processing step. See the Specification at page 7, lines 11 through 16, page 8, lines 8, lines 6 through 10, and page 8, line 24 through page 9, line 4. Examples of an

automation host (40,43,60) are shown in Figure 3 as factory automation host (40,43,60) 40 and cell controller 43 and in Figure 4 as real GEM host 60.

Examples of manufacturing tools (46-51,71-74) are shown in Figure 3 as tools 46 through 51 and in Figure 4 as machines 71 through 74.

In step (a), a separate communications and process behavioral interface (67-70) is provided to each manufacturing tool in the plurality of manufacturing tools (46-51,71-74). See the Specification at page 8, line 19 through page 9, line 4. Examples of the virtual host interfaces are shown in Figure 4 as virtual GEM hosts 67 through 69 and machine specific host 70.

In step (b), a single communications and process behavioral connection interface (62) is provided to the automation host (40,43,60). See the Specification at page 8, lines 7 through 10. An example of a single communications and process behavioral connection interface is shown in Figure 4 as persistent virtual GEM client 62.

In substep (b.1), the automation host (40,43,60) is allowed to control and coordinate operation of all manufacturing tools (46-51,71-74) in the plurality of manufacturing tools (46-51,71-74) via the single communications and process behavioral connection interface (62). See the Specification at page 7, lines 2 through 10.

#### **GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

(1) Claims 1 to 22 stand rejected under 35 U.S.C. § 102 (b) as anticipated by USPN 5,657,252 (*George*).

## ARGUMENT

### **A. Overview of Errors in the Rejection of the Claims under 35 U.S.C. 102.**

The criteria for a rejection under 35 U.S.C. § 102(b) has been defined by the courts and confirmed by the U.S. Patent and Trademark Office. "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference."

*Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

The Examiner has failed to show that each and every element set forth in the claims is found either expressly or inherently by the cited art.

### **C. Discussion of claims 1 through 11**

Independent claim 1 sets out a control router between an automation host and a plurality of manufacturing tools used to perform a processing step. The control router includes a plurality of virtual host interfaces all implemented within the control router. Each virtual host interface from the plurality of virtual host interfaces provides a communications and process behavioral interface to one of the manufacturing tools in the plurality of manufacturing tools.

Subject Matter within Independent Claim 1 not Disclosed by *George*

*George* does not disclose or suggest a control router includes a plurality of virtual host interfaces. Further *George* does not disclose each virtual host interface from a plurality of virtual host interfaces providing a communications and process behavioral interface to one of the manufacturing tools in the plurality of manufacturing tools.

What *George* Discloses

*George* discloses a dedicated interface server 16 being used for each item of factory equipment 18. *George* indicates the interface server is usually a general purpose computer. See *George* at column 5, lines 35 through 42. *George* does not disclose or suggest a plurality of virtual host interfaces all implemented within a single control router, as set out in claim 1.

Errors the Examiner Made in Rejection

Discussion of the term “Virtual”:

In the rejection of claim 1, the Examiner fails to recognize the commonly understood meaning of the term “virtual. Within the art that the term “virtual” indicates that software mimics the performance of hardware. Thus, when claim 1 states that “a plurality of virtual host interfaces all implemented within a single control router”, this indicates to a person of ordinary skill in the art that a single control router implements in software a plurality of host interfaces. This is not disclosed or suggested by *George*.

*George* shows multiple general purpose computers 16 that each implement a GEM Interface server. Thus, *George* does not use virtual host interfaces, but rather utilizes dedicated hardware to implement each GEM interface.

The fact that claims receive their broadest reasonable meaning during the patent examination process does not relieve the PTO of its essential task of examining the entire patent disclosure to discern the meaning of claim words and phrases. *Rowe v. Dror*, 112 F.3d 473, 42 U.S.P.Q. 2d 1550, 1555 (Fed Cir. 1997).

In the Specification, it is very clear that Appellant specifically uses the term “virtual” to distinguish those elements implemented in by software within a control router verses those “real” elements implemented conventionally using separate hardware. See for example Figure 4 and the Specification at page 9, line 13 through page 10, line 10. The Examiner has ignored this intended meaning of “virtual” and has instead read claim 1 as if the term “virtual” had no meaning at all and were thus not present in the claim. Thus, the Examiner has essentially ignored the presence of the term “virtual” when interpreting claim 1. Increasing the breadth of claims by ignoring limitations within the claims is not an acceptable methodology for establishing the broadest reasonable meaning of a claim.

Discussion of the term “Router”:

In the rejection of claim 1, the Examiner fails to recognize the commonly understood meaning of the term “router”.

The Examiner has argued the following:

It should be noted that figure 1 of the *George* reference (USPN 5,657,252) shows a “control router” comprising elements 12 (router element), 14, 15, and 16. These elements are comprised within the control router.

See the Office Action dated May 5, 2005 at page 2, paragraph 1.

The Examiner has incorrectly called the combinations of elements 12, 14, 15 and 16 a control router. According to *George*, element 12 is a router. Element 14 is a backbone. Elements 15 are communication lines. Elements 16 are general purpose computers that each function as a GEM Interface server. See *George* at column 5, lines 31 through 44.

*George* uses the term “router” in the conventional fashion to refer to an industry standard router. Particularly, *George* discloses the router 12 in Figure 1. The Examiner’s attempt to redefine the term “router” to include not only a conventional router but several general purpose computers 16 connected to router 12 through a backbone 14 and various communications line 15 is without precedent in the art.

The Examiner has further argued the following:

It is well known in the art for routers to include multiple processors and/or co-processors. See for example Ammitzboell USPN 2002/0120769, Page 1 Paragraph 0008.

See the Office Action dated May 5, 2005 at page 2, paragraph 1.

USPN 2002/0120769 (*Ammitzboell*), at page 1, paragraph 0008 indicates that routers can include multiple processors or co-processors. *Ammitzboell* does not disclose or suggest that a router includes multiple general purpose computers that each operate as GEM Interface servers. Persons of ordinary skill in the art

would clearly recognize the difference between a router with multiple processors and a plurality of general purpose computers (all external to a conventional router), each functioning as a GEM Interface server. While each general purpose computer 16 shown in Figure 1 of *George* has one or more processors, no person of ordinary skill in the art would mistake any of these general purpose computers for a processor within a router. The Examiner has argued that *Ammitzboell* indicates a router can have multiple processors; however, this does not disclose or suggest that a router includes multiple general purpose computers that each operate as GEM Interface servers.

The Examiner's interpretation of the term "router" is unreasonable

During examination claims are to be given their broadest reasonable meaning; however, the Examiner's interpretation of the term "router" is unreasonable. The term "router" has an established meaning. The term "router" is a term often used in the art. The term "router" does not mean several general purpose computers connected through a backbone and various communications lines to a "conventional router", as the Examiner has argued in the rejection. Assigning such a meaning to the term "router" is without precedent and unreasonable in light of the use of the term "router" in the art and in the Specification and prosecution of the present case. The combination of router 12, backbone 14, communication lines 15 and general purpose computers 16 disclosed in Figure 1 of *George* does not disclose or suggest a plurality of virtual host interfaces all implemented within a single control router as set out

in claim 1 of the present case.

The Examiner's interpretation of the term "router" specifically contradicts usage of the term "router" in the Specification

In the Specification, Appellant has very clearly discussed the prior art (See Figures 1 and 2 and the Specification at column 6, lines 8 through 24) and distinguished the prior art from the claimed invention. Specifically, in prior art systems, such as *George*, a dedicated interface server 16 is used for each item of factory equipment 18. As *George* indicates, the interface server is usually a general purpose computer. See *George* at column 5, lines 35 through 42.

Appellant has clearly set out in the Specification an improved system where a plurality of virtual host interfaces are all implemented within a single control router, as set out in claim 1. This eliminates the need for a dedicated interface server 16 to be used for each item of factory equipment 18.

In the rejection of the claims, the Examiner has redefined the term "router" so that the term "router" includes a dedicated interface server being used for each item of factory equipment. Thus, the Examiner has redefined the "router" to specifically include the very prior art that the Specification teaches is replaced by the present invention. This redefinition is not supported by the Specification or usage of the term "router" anywhere else within the art. It appears to be only a lexical device to extend coverage of the claim to the very subject matter the claim language (as taught by usage of the term "router" in the Specification) specifically excludes.

#### **D. Discussion of claims 12 through 22**

Claim 12 sets out a method for connecting an automation host to a plurality of manufacturing tools used to perform a processing step. In a step (a), a separate communications and process behavioral interface is provided to each manufacturing tool in the plurality of manufacturing tools. All the separate communications and process behavioral interfaces are provided from within a single control router. This is not disclosed or suggested by *George*.

##### Subject Matter within Independent Claim 12 not Disclosed by *George*

*George* does not disclose or suggest a separate communications and process behavioral interface being provided to each manufacturing tool where all the separate communications and process behavioral interfaces are provided from within a single control router.

##### What *George* Discloses

*George* discloses a dedicated interface server 16 being used for each item of factory equipment 18. *George* indicates the interface server is usually a general purpose computer. See *George* at column 5, lines 35 through 42. *George* does not disclose or suggest a separate communications and process behavioral interface being provided to each manufacturing tool where all the separate communications and process behavioral interfaces are provided from within a single control router, as set out in claim 12.

### Errors the Examiner Made in Rejection

#### Discussion of the term "Router":

In the rejection of claim 12, the Examiner fails to recognize the commonly understood meaning of the term "router".

The Examiner has argued the following:

It should be noted that figure 1 of the *George* reference (USPN 5,657,252) shows a "control router" comprising elements 12 (router element), 14, 15, and 16. These elements are comprised within the control router.

See the Office Action dated May 5, 2005 at page 2, paragraph 1.

The Examiner has incorrectly called the combinations of elements 12, 14, 15 and 16 a control router. According to *George*, element 12 is a router. Element 14 is a backbone. Elements 15 are communication lines. Elements 16 are general purpose computers that each function as a GEM Interface server. See *George* at column 5, lines 31 through 44.

*George* uses the term "router" in the conventional fashion to refer to an industry standard router. Particularly, *George* discloses the router 12 in Figure 1. The Examiner's attempt to redefine the term "router" to include not only a conventional router but several general purpose computers 16 connected to router 12 through a backbone 14 and various communications line 15 is without precedent in the art.

The Examiner has further argued the following:

It is well known in the art for routers to include multiple processors and/or co-processors. See for example *Ammitzboell* USPN 2002/0120769, Page 1 Paragraph 0008.

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*Ammitzboell* USPN 2002/0120769, at page 1, paragraph 0008 indicates that routers can include multiple processors or co-processors. *Ammitzboell* does not disclose or suggest that a router includes multiple general purpose computers that each operate as GEM Interface servers. Persons of ordinary skill in the art would clearly recognize the difference between a router with multiple processors and a plurality of general purpose computers (all external to a conventional router), each functioning as a GEM Interface server. While each general purpose computer 16 shown in Figure 1 of *George* has one or more processors, no person of ordinary skill in the art would mistake any of these general purpose computers for a processor within a router. The Examiner has argued that *Ammitzboell* indicates a router can have multiple processors; however, this does not disclose or suggest that a router includes multiple general purpose computers that each operate as GEM Interface servers.

The Examiner's interpretation of the term "router" is unreasonable

During examination claims are to be given their broadest reasonable meaning; however, the Examiner's interpretation of the term "router" is unreasonable. The term "router" has an established meaning. The term "router" is a term often used in the art. The term "router" does not mean several general purpose computers connected through a backbone and various communications lines to a "conventional router", as the Examiner has argued in the rejection. Assigning such a meaning to the term "router" is without

precedent and unreasonable in light of the use of the term "router" in the art and in the Specification and prosecution of the present case. The combination of router 12, backbone 14, communication lines 15 and general purpose computers 16 disclosed in Figure 1 of *George* does not disclose or suggest a separate communications and process behavioral interface being provided to each manufacturing tool where all the separate communications and process behavioral interfaces are provided from within a single control router as set out in claim 12 of the present case.

The Examiner's interpretation of the term "router" specifically contradicts usage of the term "router" in the Specification

In the Specification, Appellant has very clearly discussed the prior art (See Figures 1 and 2 and the Specification at column 6, lines 8 through 24) and distinguished the prior art from the claimed invention. Specifically, in prior art systems, such as *George*, a dedicated interface server 16 is used for each item of factory equipment 18. As *George* indicates, the interface server is usually a general purpose computer. See *George* at column 5, lines 35 through 42.

Appellant has clearly set out in the Specification an improved system where separate communications and process behavioral interfaces are provided from within a single control router, as set out in claim 12. This eliminates the need for a dedicated interface server 16 to be used for each item of factory equipment 18.

In the rejection of the claims, the Examiner has redefined the term "router" so that the term "router" includes a dedicated interface server being

used for each item of factory equipment. Thus, the Examiner has redefined the "router" to specifically include the very prior art that the Specification teaches is replaced by the present invention. This redefinition is not supported by the Specification or usage of the term "router" anywhere else within the art. It appears to be only a lexical device to extend coverage of the claim to the very subject matter the claim language (as taught by usage of the term "router" in the Specification) specifically excludes.

## CONCLUSION

For all the reasons discussed above, Appellant believes the rejection of the claims was in error and respectfully requests that the rejection be reversed.

Respectfully submitted,  
WILLIAM T. O'GRADY, JR.  
JOEL TAYLOR;  
RYO TAKEDA  
NOBUHIKO YOSHIMURA  
JOHN D. MCNEILL  
DONALD F. SHAFER  
JANET GILMORE  
PATRICK DOANE

By Douglas L. Weller  
Douglas L. Weller  
Reg. No. 30,506

September 13, 2005  
Santa Clara, California  
(408) 985-0642

## CLAIMS APPENDIX

1. (Previously Presented) A control router for providing communication between an automation host and a plurality of manufacturing tools, each of the plurality of manufacturing tools being used to perform a processing step, the control router comprising:

    a single communications and process behavioral connection interface (62) to the automation host; and,

    a plurality of virtual host interfaces all implemented within the control router, each virtual host interface from the plurality of virtual host interfaces providing a communications and process behavioral interface to one of the manufacturing tools in the plurality of manufacturing tools;

    wherein the automation host can control and coordinate operation of all manufacturing tools in the plurality of manufacturing tools via the single communications and process behavioral connection interface (62).

2. (Previously Presented) A control router as in claim 1 wherein a number of virtual host interfaces is variable depending upon a number of manufacturing tools in the plurality of manufacturing tools.

3. (Previously Presented) A control router as in claim 1 wherein the plurality of virtual host interfaces implement different communications and process behavioral interface for different manufacturing tools from the plurality of manufacturing tools.

4. (Previously Presented) A control router as in claim 1 wherein the single communications and process behavioral connection interface (62) makes the plurality of manufacturing tools appear to the automation host as a single tool.

5. (Previously Presented) A control router as in claim 1 additionally comprising a state machine scenario determinator that aggregates process state models for the plurality of manufacturing tools into a single process state model.

6. (Previously Presented) A control router as in claim 1 additionally comprising a state machine scenario determinator that aggregates control state models for the plurality of manufacturing tools into a control process state model.

7. (Previously Presented) A control router as in claim 1 additionally comprising a state machine scenario determinator that aggregates port state models for the plurality of manufacturing tools into a single port state model.

8. (Previously Presented) A control router as in claim 1 wherein a process variables set and variable identification numbers of manufacturing tools from the plurality of manufacturing tools are aggregated into a single process variable set and variable identification number range for the plurality of

manufacturing tools.

9. (Previously Presented) A control router as in claim 1 additionally comprising a host concentrator that aggregates communication message sets of individual manufacturing tools from the plurality of manufacturing tools into a single communications message set for the plurality of manufacturing tools.

10. (Previously Presented) A control router in 1 wherein each virtual host interface from the plurality of virtual host interfaces is compliant with the Semiconductor Equipment Manufacturers Institute (SEMI) generic equipment model (GEM) interface requirements.

11. (Previously Presented) A control router in 1 wherein the single communications and process behavioral connection interface (62) to the automation host is compliant with the Semiconductor Equipment Manufacturers Institute (SEMI) generic equipment model (GEM) interface requirements.

12. (Previously Presented) A method for connecting an automation host to a plurality of manufacturing tools, each of the manufacturing tools being used to perform a processing step, the method comprising the following steps:

(a) providing a separate communications and process behavioral interface to each manufacturing tool in the plurality of manufacturing tools, all the separate communications and process behavioral interfaces being provided

from within a single control router; and,

(b) providing a single communications and process behavioral connection interface (62) to the automation host, including the following substep:

(b.1) allowing the automation host to control and coordinate operation of all manufacturing tools in the plurality of manufacturing tools via the single communications and process behavioral connection interface (62).

13. (Previously Presented) A method as in claim 12, wherein in step (a) a number of virtual host interfaces is variable depending upon a number of manufacturing tools in the plurality of manufacturing tools.

14. (Previously Presented) A method as in claim 12, wherein in step (a) the plurality of virtual host interfaces implement different communications and process behavioral interface for different manufacturing tools from the plurality of manufacturing tools.

15. (Previously Presented) A method as in claim 12, wherein in step (b) the single communications and process behavioral connection interface (62) makes the plurality of manufacturing tools appear to the automation host as a single manufacturing tool.

16. (Previously Presented) A method as in claim 12, additionally comprising the following step:

(c) aggregating process state models for the plurality of manufacturing tools into a single process state model.

17. (Previously Presented) A method as in claim 12, additionally comprising the following step:

(c) aggregating control state models for the plurality of manufacturing tools into a single control state model.

18. (Previously Presented) A method as in claim 12, additionally comprising the following step:

(c) aggregating port state models for the plurality of manufacturing tools into a single port state model.

19. (Previously Presented) A method as in claim 12, additionally comprising the following step:

(c) aggregating a process variables set and variable identification numbers of manufacturing tools from the plurality of manufacturing tools into a single process variable set and variable identification number range for the plurality of manufacturing tools.

20. (Previously Presented) A method as in claim 12, additionally comprising the following step:

(c) aggregating communication message sets of individual manufacturing

tools from the plurality of manufacturing tools into a single communications message set for the plurality of manufacturing tools.

21. (Original) A method in 12 wherein in step (a) each separate communications and process behavioral interface is compliant with the Semiconductor Equipment Manufacturers Institute (SEMI) generic equipment model (GEM) interface requirements.

22. (Original) A method in 12 wherein in step (b) the single communications and process behavioral connection interface (62) to the automation host is compliant with the Semiconductor Equipment Manufacturers Institute (SEMI) generic equipment model (GEM) interface requirements.

## **EVIDENCE APPENDIX**

No evidence under §§ 1.130, 1.131, or 1.132 is relied upon by appellant in the appeal.

## **RELATED PROCEEDINGS APPENDIX**

There are no related decisions rendered by a court or the Board.